

# Hydrogen Sulfide

## What is hydrogen sulfide?

Hydrogen sulfide is a very harmful, colorless gas with a strong, “rotten-egg” odor. This gas is released naturally by decaying plants, animals, and sewage. It can be formed in small amounts when coal and oil are burned.

Hydrogen sulfide occurs naturally in sewer gas, swamp gas, manure pits, volcanoes, and fossil fuels. Hydrogen sulfide is also created during the production of oil, rayon, paper and leather. Some industries use hydrogen sulfide to make other chemicals.

## How can I be exposed to hydrogen sulfide?

People are exposed to hydrogen sulfide by breathing air that contains the gas. Hydrogen sulfide levels can be high near manure pits, paper mills, wastewater treatment plants, and other industries that produce the gas.

Hydrogen sulfide is often found in sewer gas and can enter homes through dried-out sewer traps or clogged sewer vents. (Sewer traps are U-shaped pipes that need to be filled with water to keep gases out of your home.)

People who work at facilities that produce or use hydrogen sulfide are exposed to higher amounts than the general population. People who live near these facilities may also be exposed if an accidental leak occurs. Hydrogen sulfide levels in the air are generally quite low in most parts of the country.

## What are the effects of exposure to hydrogen sulfide?

### **Low levels**

Hydrogen sulfide has a very strong odor and can be smelled at levels as low as 0.005 - 0.02 parts per million (ppm). Higher levels may cause an offensive, rotten-egg odor, and can irritate eyes, nose, and throat. The lungs and nasal passages may also become inflamed. Eyes may become sore and watery. Your throat may itch and you may start to cough. Long-term health effects of low level hydrogen sulfide exposure are unknown.

### **High levels**

At levels above 100 ppm, hydrogen sulfide is very dangerous. The gas loses its odor by overpowering the sense of smell and begins to affect the whole body.

At 250 ppm, a person may quickly lose consciousness. They may experience powerful stinging of the eyes, throat, and suffer from severe lung inflammation.

At 500 ppm and higher, people can have convulsions, respiratory arrest, and heart failure. High exposure levels may also cause permanent brain damage. According to the National Institute for Occupational Safety and Health (NIOSH), hydrogen sulfide is a leading cause of sudden death from workplace chemical exposure. At very high levels, hydrogen sulfide can be explosive.

### **What levels of hydrogen sulfide are hazardous?**

The U.S. Environmental Protection Agency (EPA) has set the safe exposure level for hydrogen sulfide at 0.0014 ppm. This level is set to protect even sensitive people such as children or the elderly, against the effects of long-term exposure.

### **How can I avoid being exposed to hydrogen sulfide?**

Be cautious if you smell a rotten-egg odor, especially if it causes eye irritation—it may be hydrogen sulfide. Hydrogen sulfide is heavier than air and can collect in low areas, such as manure pits, sewers, and gas wells. Never enter a manure pit or sewer without proper training and equipment.

### **What should I do if I suspect a problem?**

If you smell a strong, rotten-egg odor and feel eye irritation, leave the area and call the local fire department. Elderly people, children, and people with lung disease, such as asthma or emphysema, may be especially sensitive to hydrogen sulfide. If the symptoms continue after the exposure has ended, consult your doctor or health care provider.

### **For more information**

- Contact the Wisconsin Division of Public Health, Bureau of Environmental Health, PO Box 2659, Madison, WI 53701-2659, (608) 266-1120; or
- Visit the department's website, [dhfs.wisconsin.gov/eh](http://dhfs.wisconsin.gov/eh)



Developed by the Wisconsin Division of Public Health,  
Bureau of Environmental Health  
1 West Wilson, Madison WI 53701  
PPH 4982 (revised 1/05)